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submarine cables in the same time that 20 words can be sent now. Dr. Herz's invention would allow of cabling 50 words at a cost of five cents, and would render submarine telephony and multiplex telephony feasible.

#### CORRESPONDENCE.

##### THE NATURE OF VOWELS.

THERE is one statement in Professor Le Conte's letter in *SCIENCE* (Aug. 16th) which seems to me worth further examination. He writes, "Now it is true that the vowels are true musical tones, but it is not true that each has its own pitch."

In a paper on the voice published in the *Journal of Physiology*, Vol. IV., 1883, I took ground on this subject at variance with the view set forth by Professor Le Conte at least in its most rigid form. I consider his statement a partial truth only.

My paper is not at hand, so I cannot quote from it, but the matter was put somewhat thus: There is but one position of the vocal apparatus—vocal bands and supraglottic parts—one structural and functional combination so far as the human vocal mechanism is concerned for the perfect production of each vowel, and the further this is departed from the greater the deviation from this true and perfect result. It will be noticed that the entire range in pitch in ordinary conversation is very limited, and even in the most exciting dramatic passages the range covers but a few notes. Moreover, the best classic music and the popular songs that are most lasting and effective have a limited range, all of which is a matter of considerable significance, but part of that significance is owing to the fact that the proper production of the vowels in their purity is determined as I have indicated; and the poet, orator, actor, singer or composer who recognizes this principle will prove so far as this can go most successful. Compare such words as 'roar' and 'scream.' What effect would 'roar' produce if spoken or sung at a very high pitch or 'scream' at a very low pitch?

Now, if any one doubts as to this let him make the simple test of singing the vowels o,

u, a, at his highest pitch, and at the same time require some listener to name the vowel he is attempting to produce. I venture to say that there will be some very ludicrous answers, and I think the majority of persons will be convinced then that pitch does go a long way in the *proper* production of vowels. That something more or less like them may be produced at different points in the scale I do not question and, of course, we accept in practice these departures from the proper vocal effect or best result if not too great. WESLEY MILLS.

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##### THE 'DATE OF PUBLICATION' IN THE LIGHT OF THE LAW OF PRIORITY.

THE American Association for the Advancement of Science, in common with its sister organizations in Europe and in Australasia, has repeatedly had occasion to consider the question of scientific nomenclature; and as a result of many deliberations, zoölogists have practically agreed upon a code of rules, which have now been adopted by the International Congress and should be followed by every worker. These rules, as well as their predecessors, contain the so-called law of priority; and in consequence, the entire structure is made to depend on last analysis upon the 'Date of Publication.' How important it is then to define exactly what is meant by this term!

The present rules, adopted by the International Congress through the initiative of Dr. Raph. Blanchard, show a distinct advance in that they declare that the date at which a paper is read before a learned society does not constitute publication in the sense of this law. A thing to be published must be printed. Some still maintain that a memoir is published as soon as it leaves the hands of the author after the last corrections have been made upon it. I am even told that this is the ruling in certain legal cases—patents and the like. It is, however, a date which is in practice impossible to establish, and is consequently wholly unfitted for such a code of rules. These rules are confessedly arbitrary to a certain extent, and it is by no means necessary that we should avoid setting up a somewhat artificial rule in this case as well.